

2004 Worldwide Energy Conference

Washington, DC



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Agenda

- ❖ Fort Monmouth Overview
- ❖ Scope of Work
- ❖ Financial Summary
- ❖ Benefits

Fort Monmouth Video

Fort Monmouth Makes History

- ❖ Legislation sunset (September 30, 2003)
- ❖ Kickoff meeting to task order- 98 days
- ❖ Task order issued 6:00 p.m. September 30, 2003

Scope of Work

- ❖ ECM 1 – Lighting upgrade
- ❖ ECM 2 – Building 800 HVAC renovation
- ❖ ECM 3 – UESC area-wide implementation
- ❖ ECM 4 – Geothermal heat pumps (1200 Area)
- ❖ ECM 7a -Cogeneration system site prep/feasibility (Bldg 2700)

Lighting Upgrade

- ❖ New fixtures
- ❖ T8 & T5 lamps
- ❖ Electronic ballast
- ❖ Exit signs
- ❖ Controls
- ❖ Installation covered 1,248,036

- Sq ft	14	- Bldg 271	- Bldg 292	- Bldg 976
-	Bldg 116	- Bldg 277	- Bldg 502	- Bldg 1075
-	Bldg 117	- Bldg 283	- Bldg 689	- Bldg 1212
-	Bldg 209	- Bldg 286	-	- Bldg 2700
-	Bldg 270	- Bldg 288	- Bldg 918	

Building 800 Renovation

- ❖ Currently under renovation
- ❖ Structural complete
- ❖ Ready for build-out
- ❖ Funds for HVAC unavailable
- ❖ 60-ton AC and furnaces removed for renovation
- ❖ Renovation includes installing closed-loop geothermal heat pumps in place of existing fan coils and air handling units

UESC Area-Wide Implementation

- ❖ Fort Monmouth was currently developing an energy and operational savings program under an area-wide contract with the local utility. The program, referred to as the Utility Energy Services Contract (UESC), was based on four tasks:
 - Task 1 Boiler Plant (Building 1220) decentralization
 - Task 2 Site-wide controls infrastructure
 - Task 3 Geographic Information Systems (GIS)
 - Task 4 Facility Management Job Order System (CMMS)
- ❖ Ameresco bundled the project into the ESPC, captured the savings over the 22-year term, redesigned tasks 1 and 2 and pulled through tasks 3 and 4

Geothermal Heat Pumps (1200 Area)

- ❖ Demolish central steam plant.
- ❖ Replace existing fan coils and fin-tube heaters (approximately 185 per building) with geothermal console units.
- ❖ All existing air handlers, unit ventilators and duct ceiling-fan coil units will be replaced with geothermal air handlers.
- ❖ A series of vertical boreholes will be drilled into the ground outside each facility and a closed loop of high-density polyethylene (HDPE) piping will be installed in each borehole. This will be an entirely closed-loop system – no fluid will be taken from or rejected into the ground.

Geothermal Heat Pumps (1200 Area)

- ❖ Buildings 1200, 1201, 1202, 1206, 1207, 1208, 1209, 1210, 1211, 1212 1150 and 1152,
- ❖ 2,351 tons of cooling
- ❖ 774,971 sq. ft.

Cogeneration System Site- Prep/Feasibility

- ❖ The feasibility of a 15 MW landfill gas-fired cogeneration system being installed at the Fort Monmouth site is being evaluated
- ❖ First Federal project of its type
- ❖ Four mile pipeline
- ❖ Electrical interconnection between Charles Wood and main post
- ❖ Fixed gas price for 23 years
- ❖ Gross electrical power output -15.4 MW

Monitoring & Verification

- ❖ Maintenance monitored by Ameresco and continued with existing personnel
- ❖ Monitoring & Verification (M&V)
 - **Option A:** Stipulated baseline and savings, verified equipment performance
 - **Option B:** System-level M&V assessment that relies on the physical assessment of equipment to ensure that installation is to specification. The potential of the ECM to generate savings is verified through observations, inspections, spot, short-term, and/or continuous metering.

Financial Summary

- ❖ Total amount financed \$25,112,932
- ❖ Annual energy savings \$ 1,727,872
- ❖ Annual M&O savings \$ 877,578
- ❖ Term 22 years
- ❖ Finance rate 6.79%

Contract

Features

- Title conveys to Ft. Monmouth at acceptance
- 24 month construction period savings used to buy-down principal
- Yearly payments made in advance vs. arrears

Benefits

- Ameresco doesn't pay yearly taxes in turn lowering overall cost to the customer
- Ft. Monmouth saved on interest and shortened term the contract term

Program Benefits

- ❖ Expedite Ft. Monmouth's transformation vision while improving existing building infrastructure
- ❖ Provide safer and healthier working conditions
- ❖ Reduce energy use and costs
- ❖ Reduce maintenance deficit and costs
- ❖ Help meet federal energy and emissions-reduction goals
- ❖ Insure guaranteed results

Questions?



Jim Ott
Director of Public Works



Wayne Womble



September 30, 2004

Back up slides



Fort Monmouth Makes More History?

Task Order Modification

- First Federal project of its type
- Four mile pipeline
- Electrical interconnection between Charles Wood and Main Post
- Fixed gas price for 23 years
- Gross Electrical Power Output -15.4 MW
- Project Costs- \$57,616,319
- Term - 23 years

Landfill Gas to Energy Video

Phase II

Geothermal Heat Pump Scope of Work

- Geothermal Heat Pumps (Site-wide - Bldg 283)
- Geothermal Heat Pumps (Site-wide - Bldg 286)
- Geothermal Heat Pumps (Site-wide - Bldg 2539)
- Geothermal Heat Pumps (Site-wide - Bldg 2700 DOIM)
- Geothermal Heat Pumps (Site-wide - Bldg 209)

Phase II

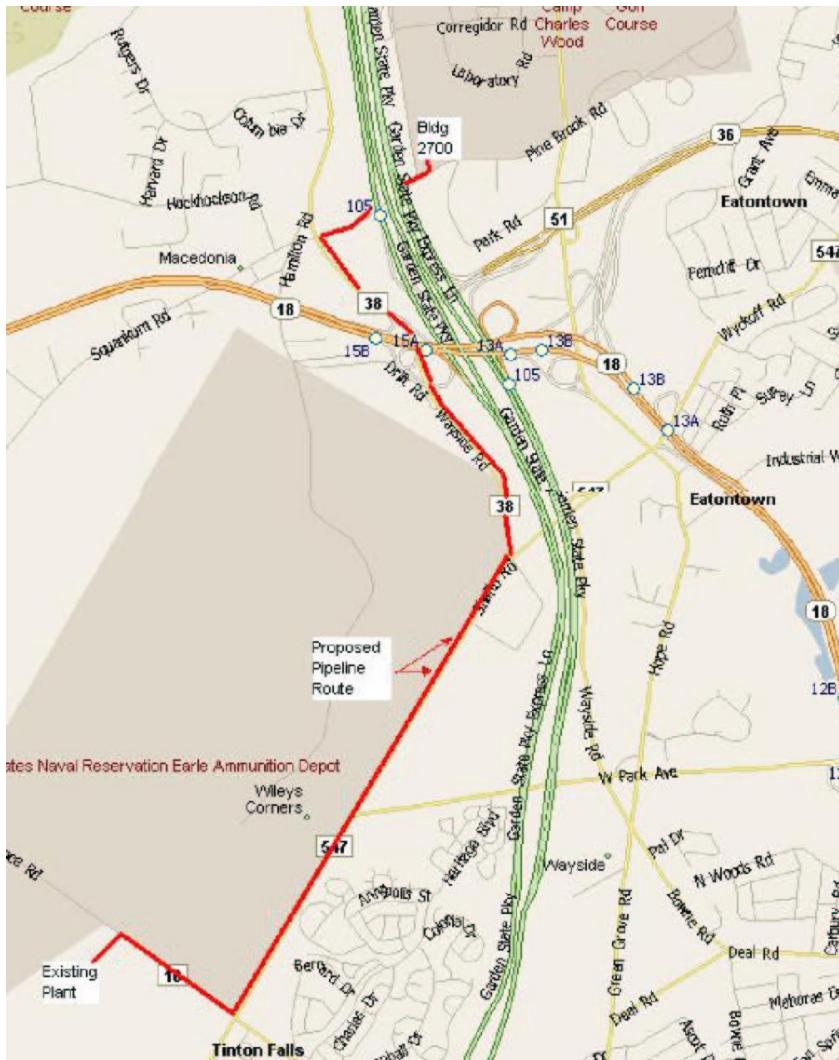
Cogeneration Scope of Work

- The Cogeneration System Capacities Include
 - ✓ Gross Electrical Power Output - 15.4 MW
 - ✓ Net Electrical Power Output - 13.8 MW
 - ✓ Hot Water Thermal Energy Output - 10 MMBtuh
- The proposed landfill gas cogeneration system will include the following major equipment:
 - ✓ Two (2) Solar Taurus 60 Landfill Gas-Fired Combustion Gas Turbines rated at 5.2 MW each
 - ✓ One (1) Exhaust Gas Heat Recovery Steam Generator (HRSGs) rated at 30,000 lb/hr each
 - ✓ Two (2) 850 hp Dresser-Rand LFG Compressors
 - ✓ One (1) Steam to Hot Water Heat exchanger rated at 10 MMBtuh
 - ✓ Two (2) Steam Turbines rated at 2.5 MW each

Major Milestones Remaining

- ESPC Legislation
 - Support of the Defense Appropriations Bill with ESPC Amendment
- NJ Department of Environmental Protection
 - One stop shop established by Gary Sondermeyer (Chief of Staff) of NJ DEP
 - ✓ Emissions, water and land permitting
- Right of Ways (underground gas pipeline & overhead electrical distribution)
 - Naval Weapons Station Earle
 - State and localities
 - J CP&L
- Rights to Future Landfill gas
 - Monmouth County

Right of Ways



1. Gas pipeline right of way:
 - A. Route along boundary of Naval Weapons Station Earle
 - B. Proceed along existing county roads
 - C. Burrow below New Jersey Transit line
 - D. Burrow below Garden State Parkway into Charles Wood
2. Dedicated overhead electrical distribution:
 - A. Proceed from Charles Wood across New Jersey Transit line
 - B. Follow New Jersey Central Power and Light right of way to Ft Monmouth's main base